The Genevac
EZ-2 Inert Gas Purge System

User Manual

Issue 1-6 – June 2005

Part Number 04-4219

AMENDMENT CONTROL FORM

Revision Number.	Issue and Reason for Change	Date Issued
1	Change in hose adapter.	04 August 2003
2	Spares items 1b and 1c re-identified	28 October 2003
3	Changes to EU Declaration of Conformity	09 February 2004
4	Introduction of Block Diagram	20 April 2004
5	Changes to EU Declaration of Conformity and Addition of EZ-2 Err 42 explanation.	21 September 2004
6	Connection Kit Item 4 – Part Number Change. Item 11 transferred from consumables kit. Introduction of Disposal and recycling instructions.	28 June 2005

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These operating instructions should be read before you use the Genevac EZ-2 Inert Gas Purge System.

Keep them near the system for easy reference.

Fig 1 – Inert Gas Purge (IGP)

Fig 2 – Remote Control

1 Introduction

The Genevac Inert Gas Purge system is designed to be fitted to the Genevac EZ-2 & EZ-2^{plus} Personal Evaporators, with a minimum of interference to wiring and piping.

The primary function of the Inert Gas Purge system is to control the supply of inert gas to the evaporating system during the evaporation of low flash point solvents, such as diethyl ether, to prevent the possibility of explosion.

The system is comprised of a:

control module

and

remote control pad

1.1 Safety symbols

The following safety symbols are used throughout this manual.

The definitions and scope of each symbol is as described below.

WARNING

THIS SYMBOL WILL INDICATE HAZARDS THAT CAN LEAD TO SERIOUS MATERIAL DAMAGE OR POTENTIAL SERIOUS INJURY.

Caution

This symbol will give information about hazards that can be harmful to your health or lead to material damage.

Note

This symbol will give information about technical requirements which if not followed, can lead to malfunctions, inefficiency and reduced productivity.

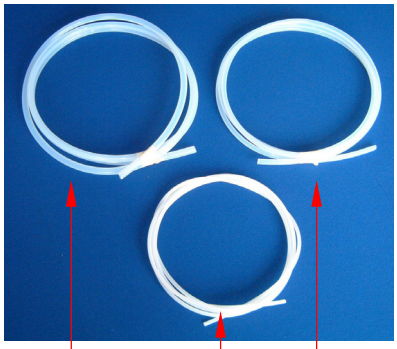
This symbol indicates that there may be a risk to sample integrity.

IMPORTANT
THIS SYSTEM MUST BE EARTHED – SEE PAGE 9

1.2 Connection Kit Contents:

Description	Part Number	Quantity	U/m	Fig ID
Hose $^{3}/_{8}$ With Connectors (See Breakdown for spares below)	70-0790	1	EA	1
Tube Flex Nylon 4mm OD 2.5 ID	AB7001	2	Metre	2
Tube PTFE 6mm OD 4mm ID	AB7028	2	Metre	3
Tube PTFE 8mm OD 6mm ID	AB7006	2	Metre	4
Knob Long (See Breakdown for spares below)	70-0785	1	EA	5
Knob Short (See Breakdown for spares below)	70-0786	1	EA	6
Fitting Stud 8mm S/S	04-0936	1	EA	7
Connector Straight 4mm – 4mm (usage optional)	04-1017	1	EA	8
Reducer Plug 6mm – 4mm M-F	04-1018	1	EA	9
Reducer Serto 6mm – 8mm F-M	04-3982	1	EA	10
Male Adapter - Union	04-3855	1	EA	11

1



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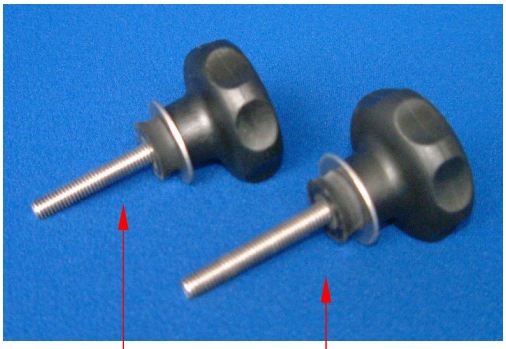

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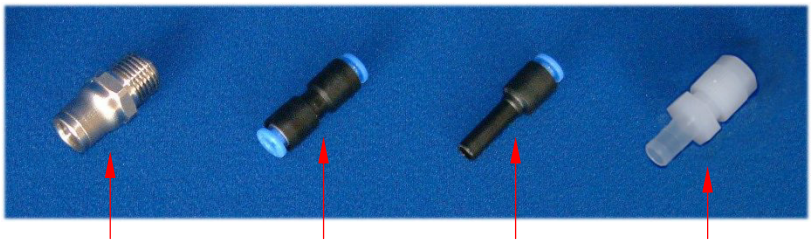

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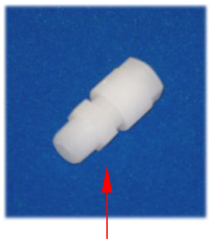

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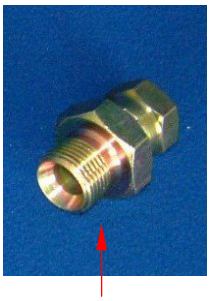
1.3 Spares (available on request):

Description	Part Number	Quantity	U/m	Fig ID
Hose $^{3}/_{8}$ With Connectors	04-1650	1	EA	1a
Coupling Plug QR	04-0928	1	EA	1b
Fitting $^{3}/_{8}$ BSP – ¼ BSP M-F	04-1651	1	EA	1c
Washer ¼ x 1 Penny	04-4165	2	EA	56a
Washer	04-3878	2	EA	56b
Main Supply Fuse 100 - 120V T2A “Siba”	04-4217	1	EA	N/A
Main Supply Fuse 208 - 230V T1A “Siba”	04-4218	1	EA	N/A

1a

1b



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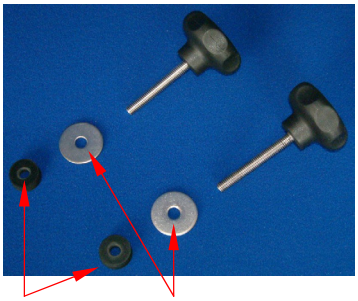

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Visit: http://www.genevac.com/contact/ezspares.html to request all of the above items online.

1.4 Installation

THE INERT GAS PURGE UNIT (IGP) MUST ONLY BE FITTED BY AN ENGINEER THAT THE COMPANY DEEMS TO BE COMPETENT IN MECHANICAL AND ELECTRICAL INSTALLATION WORK.

THE EZ-2 EVAPORATOR MUST BE ISOLATED FROM THE MAINS POWER SUPPLY DURING INSTALLATION OF THE INERT GAS PURGE.

The Inert Gas Purge system (IGP) can only be fitted to an EZ-2 evaporation system built with the Inert Gas Purge option.

The IGP is supplied with a tubing and connection kit to facilitate connection of the unit to the EZ-2 evaporation system.

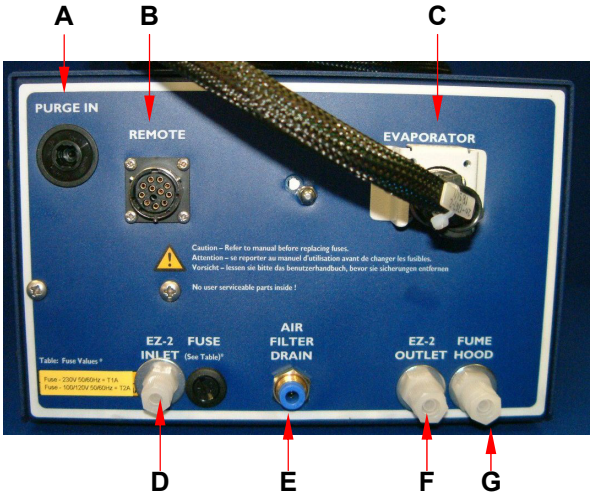

Fig 3 - Inert Gas Purge (IGP)

Fig 4 - EZ-2 Side Panel

Before connecting the pipes to the system ensure that all pipe ends are cut square.

Purge In: Connect the inert gas supply hose (70-0790) to the 8 mm push in fitting "**A**" on the purge unit to a suitable regulated supply. See 'Technical data' section for gas pressure requirements.

Fume Hood: Connect suitable length of PTFE hose (04-0937) from the fume hood to connection "**G**" on the purge unit.

Filter Drain: Connect suitable length of Nylon Flex hose (AB7001) to reducer plug (04-1018) and insert in to the 4 mm push in fitting "**E**" on the purge unit, placing the free end of the hose into a suitable waste container. Only water will be emitted.

EZ-2 Outlet: Connect 1 metre length of PTFE hose (AB7028) to connection "**F**" on the purge unit using reducer 04-3982. Remove blanking plug from EZ-2 Side Panel connection "**I**" and connect hose.

EZ-2 Inlet: Connect 1 metre length of PTFE hose (AB7028) to connection "**D**" on the purge unit. Unscrew and remove filter from EZ-2 Side Panel connection "**H**" and connect hose using adapter 04-3855.

Remote: Connect the remote control unit to the 'REMOTE' socket "**B**" on the purge unit.

EZ-2 Side Panel connection "**J**" is not used at present and has a blanking plug fitted. When using the Inert Gas Purge System, this blanking plug should be removed and retained.

1.4 Installation (Continued)

EZ-2 PANEL CONNECTION "K" HAS A "BLANKING PLUG" AND SECURITY BRACKET FITTED WHEN IT LEAVES GENEVAC. THIS MUST ONLY BE REMOVED BY AN ENGINEER THAT THE COMPANY DEEMS TO BE COMPETENT IN MECHANICAL AND ELECTRICAL INSTALLATION WORK.

REMOVING THE SECURITY BRACKET AND BLANKING PLUG AND REPLACING IT WITH THE CONTROL CABLE IS POTENTIALLY HAZARDOUS SINCE THE CABLE CARRIES MAINS VOLTAGE.

ALWAYS ENSURE THAT THE EZ-2 IS SWITCHED OFF AND UPLUGGED FROM THE MAINS POWER SUPPLY BEFORE ANY WORK COMMENCES.

THE SECURITY BRACKETS MUST BE FITTED TO EZ-2 END OF THE CABLE BEFORE THE MAINS POWER SUPPLY IS RESTORED.

Ensure Mains power is isolated and that the power lead is unplugged from evaporator.

Remove bracket securing screws (qty 2) and bracket.

Remove Blanking Plug and retain in a safe place. (Without the IGP Module, EZ-2 will not work without this plug being fitted).

Connect control cable to EZ-2 Side Panel connection **"K"** (See Fig 4) and refit security bracket and securing screws (qty 2).

Fig 5 – Blanking Plug and Bracket

Fig 6 – EZ-2 Control Cable and Bracket

Fig 7 - IGP Control Cable and Bracket

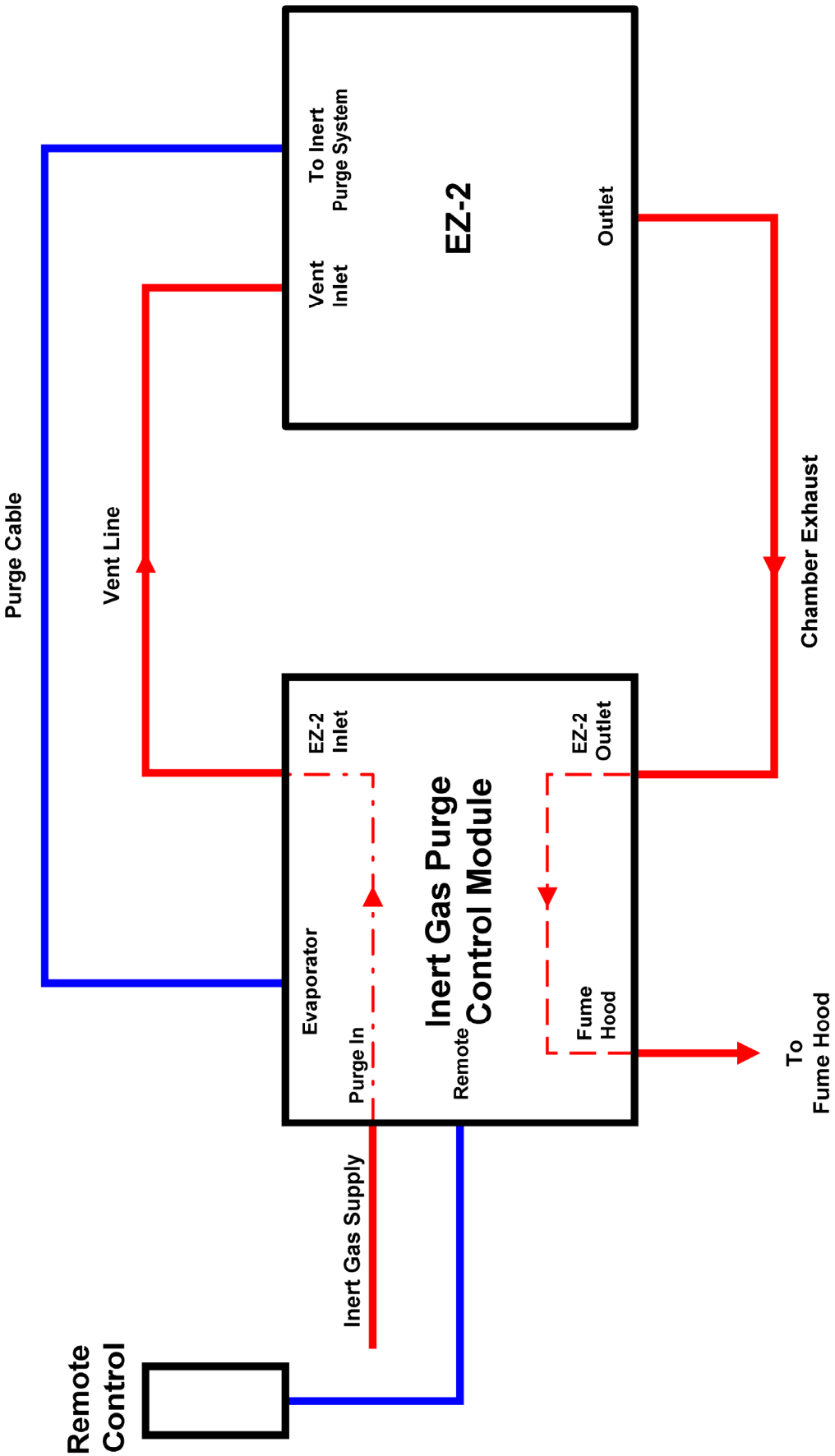

Fig 8 – Block Diagram

Fig 9 – IGP Remote Control

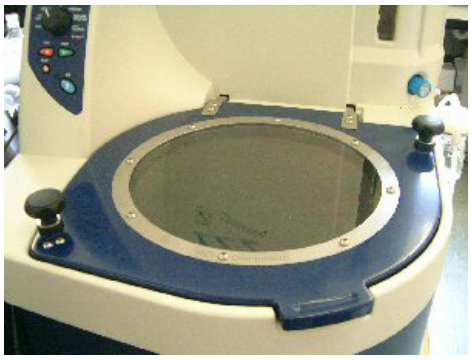

Fig 10 - Thumb Screws

Fig 11 – EZ-2 Control Panel

2 Operation

With the key selector set to NORMAL, the EZ-2 can be used without the IGP being disconnected and without an inert gas supply being available.

With the key selector set to PURGE, the purge function is available.

Ensure that the inert gas supply meets the pressure requirements as detailed in the 'Technical data' section.

Ensure that the EZ-2 lid is closed and that the Thumb Screws (qty 2) are fitted, longest to the right rear position.

Switch on evaporator; note that the 'POWER' light, the 'RESET' light and the 'N_2OK' light will be illuminated on the purge system remote control unit.

Reset light is only lit when chamber pressure is at atmospheric.

If 'N_2OK' lamp is not lit then recheck inert gas supply, pipes and connections.

Press 'START' on EZ-2 control panel, screen will display 'not PrGd'.

Press 'START' on the remote. The 'PURGING' light will flash whilst the system is being purged.

The purge period is set for 240 seconds (4 Mins).

The green 'READY' lamp will be illuminated when the purge cycle is completed and the system is ready to start the run.

Press the START button on the EZ-2. If 'START' button on EZ-2 control panel is not pressed immediately, the IGP will wait for 60 mins before resetting and will continue to purge during this period.

In exceptional circumstances i.e. very cold chamber, the EZ-2 could take longer to start the run this may require a custom run configuration.

Centrifuge Run: The IGP relies on the EZ-2 pulling a small vacuum to indicate the start of a run, which this run doesn't. Please contact Genevac if you need to operate the EZ-2 on this run setting with Inert Gas Purge.

The purge cycle can be interrupted at any time during the purging cycle by pressing the 'CANCEL' button.

If you pause a run or if the 'N_2OK' light extinguishes at any time during the purge cycle, the system will reset and you will have to perform a complete purge cycle again.

When the run is complete or is stopped, the system will automatically vent, using IGP, for 90 seconds (indicated by Brake Timer in EZ-2 display counting down to zero).

With inert gas purge unit (IGP) connected to the EZ-2 and the key selector set to PURGE, ensure that the gas supply is always available during the runs.

3 Fault diagnosis

- **'N_2OK' not lit: -**
  1. Check inert gas supply connection.
  2. Check inert gas supply is at the correct pressure. See 'Technical data' section for pressure.
  3. Check fuse.
- **Momentary dipping in purge pressure causes purge to cancel.**
  1. Check inert gas supply pressure.
  2. Regulator / filter may need servicing, contact Genevac Service Department.
- **Purge system resets a few seconds after purge cycle started: -**
  1. Check that the lid of the EZ-2, is closed and secured with Thumb Screws (Qty 2).
- **RESET lamp illuminated: -**
  1. 'CANCEL' button has been pressed.
- **Red 'FAULT' lamp illuminated: -**
  1. There is an internal fault in the control module. Contact Genevac Service for assistance in this case.
- **Err 42 Displayed on EZ-2: -**
  1. Inert Gas Purge Unit has been reset or Gas supply has been lost.

4 Inert purge gases

The system is suitable for use with either nitrogen or argon, which should be dry.

Consult Genevac Service if you intend to use an alternative inert gas.

5 Technical data

Inert Gas supply

Max pressure	8 bar
Min pressure	3 bar
Flow	30 litres/min @ STP
Purge system filter draining	Automatic
N_2OK Set point	0.9 bar

Control Module

Weight	9 Kg

Dimensions

Control Module (W x D x H)	260 x 300 x 180 mm

Electrical

Power supply	208 - 230V ±10%, 50/60Hz, single phase 100 - 120V ±10%, 50/60Hz, single phase Note: - The purge system is powered from the EZ-2 connection cable and requires no external supply.	
Fuse ratings	208 - 230V 100 - 120V	T1A “Siba” T2A “Siba”

Contact Genevac Service or use our web based spares form:
http://www.genevac.com/contact/ezspares.html
to request replacement fuses and other components.

6 EC Declaration of Conformity

We Genevac Limited

Declare that this product:

Inert Gas Purge System

Complies with the relevant Essential Health and Safety Requirements of the European Machinery Directive (89/392/EEC as amended by 91/368 EEC and 93/44/EEC). The EMC Directive 89/336/EEC and the Low voltage Directive 73/23/EEC.

Conformity is demonstrated by compliance with the following specifications: -

EN 60204-1:1998, Safety of machinery– Electrical equipment of machines-Pt 1 General Requirements

BS EN ISO 12100 pts 1 & 2:2003, Safety of Machinery - Basic concepts, general principles for design.

BS EN 50082-1: 1998, Electromagnetic compatibility-Generic immunity standard.

BS EN 61010-1: 1993, Safety requirements for electrical equipment for measurement, control and laboratory use.

7 Safety

WARNING!

THIS SYSTEM MUST BE EARTHED

THIS PURGE SYSTEM IS A SAFETY CLASS 1 PRODUCT ACCORDING TO IEC CLASSIFICATION. IT MUST NEVER BE USED WITH ANY INTERRUPTION TO THE SAFETY EARTH CONDUCTOR. IT IS AN INSTALLATION CATEGORY II PRODUCT AND IS INTENDED TO OPERATE FROM A NORMAL SINGLE-PHASE SUPPLY.

THIS PURGE SYSTEM HAS BEEN DESIGNED TO BE USED IN A POLLUTION DEGREE 1 ENVIRONMENT (NO POLLUTION, OR ONLY DRY NON-CONDUCTIVE POLLUTION).

ANY MAINTENANCE OR REPAIR OF THIS PRODUCT SHALL BE CARRIED OUT BY GENEVAC PERSONNEL (OR APPROVED REPRESENTATIVES OF GENEVAC) USING ONLY APPROVED SPARE PARTS

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The Sovereign Centre
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Email: atlas@genevacusa.com

8 Useful information

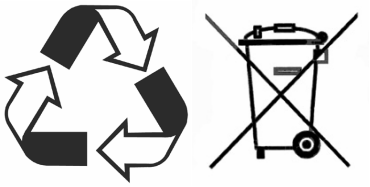
If you need to contact Genevac for assistance, use either the telephone or fax Hotlines given.

It will always help Genevac Service if you have the serial numbers at hand for the components of your system

If you need to contact Genevac Sales for information on Service Contracts or products, use the telephone or fax Hotlines given.

Alternatively, Email or visit our web site.

9 Disposal and Recycling



The Genevac product should not be discarded in your regular disposal stream. Contact your Distributor or Genevac for proper disposal instructions.

Within the EU, it is Genevac's responsibility under the WEEE directive to provide for the recycling of their products.